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SEMICONDUCTOR SUBSTRATE AND ITS MANUFACTURE

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ABSTRACT

PURPOSE: To provide a semiconductor substrate wherein its mechanical strength is high, its cost is low and its crystallinity is excellent regarding the semiconductor substrate and its manufacturing method which are used to grow a compound semiconductor crystal.

CONSTITUTION: An SiO(sub 2) film 2 in which an opening 3 has been made is formed on an Si single-crystal substrate 1; a GaAs single-crystal layer 5 is grown selectively, by an ALF method, on a seed 4 which is exposed on the bottom of the opening 3; a GaAs single crystal 6 is formed, by an LEP method, on the GaAs single-crystal layer 5. Alternatively, an SiO(sub 2) film 2 in which an opening 3 has been made is formed on an Si single-crystal substrate 1; a selective-growth GaAs single-crystal layer 7 is formed, by a first growth condition, on a seed 4 which is exposed on the bottom of the opening 3; GaAs is deposited, by a second growth condition, on the whole surface; a nonselective-growth GaAs single-crystal layer 8 is formed on the selective-growth GaAs single-crystal layer 7; a nonselective-growth polycrystalline layer 9 is formed on the SiO(sub 2) film 2. After that, the temperature is raised; the whole of the nonselective-growth polycrystalline layer 9 is changed to a single crystal by making use of the nonselective-growth GaAs single-crystal layer 8 as a seed.

